REMARKS

Claims 1, 5, 6, 7, 9, 10, 14, 45 and 48 are amended. Claim 46 is cancelled. Claims 1-45 and 47-58 are pending in the application.

Claims 5, 14-34 and 48 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that the phrases "type of particulates" or "type of impurities" as recited in claims 5, 14 and 48 are unclear. Without admission as to the propriety of the Examiner's rejection, applicant has amended claims 5, 14 and 48. As amended, claim 5 recites information about a type of particulate wherein a particulate type relates to a relative content of at least one of carbon and oxygen within the particulate. As amended, independent claim 14 recites an undissolved material type being related to at least one of a conductivity, an oxide content and a carbon content of the undissolved material. As amended, claim 48 recites a first type of impurity and a second type of impurity which is different than the first type of impurity with respect to at least one of conductivity, carbon content and oxygen content. The amendments to claim 5, 14 and 48 are supported by the specification at, for example, page 2, lines 17-21 and page 18, lines 22-25. As amended, claims 5, 14 and 48 clearly set forth the meaning of "type". Accordingly applicant respectfully requests withdrawal of the 112 rejection of claims 5, 14, 48 and dependent claims 15-34 in the Examiner's next action.

Claims 1-58 stand rejected under 35 U.S.C. § 103 as being unpatentable over Pavate, U.S. Patent No. 6,001,227 in view of one or more of Nakanouchi, U.S. Patent No. 4,584,078; King, U.S. Patent No. 4,697,080 and Kitamura, U.S. Patent No. 5,477,049. The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirem nts: 1) th re must be som suggestion or motivation to modify or combine references teachings; 2) there must be a reasonable

expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Each of claims 1-45 and 47-58 are allowable for at least the reason that Pavate, Nakanouchi, King and Kitamura, individually or as combined, fail to teach or suggest each and every limitation in any of those claims.

Referring to claim 1, as amended such recites scanning across a substrate with a microscope to obtain data about particulates at locations along a pattern, and determining a relative contrast of two or more of the particulates. The amendment of claim 1 incorporates a portion of the subject matter recited in original claim 6 and therefore does not add "new matter" to the application. Pavate discloses using examination with the microscope to determine an inclusion size distribution using manual light microscopy techniques such as ASTM F24 and F25 (col 13, lns 14-40). Pavate does not disclose or suggest the claim 1 recited scanning along a pattern to obtain data about particulates and determining a relative contrast of two or more of the particulates. Not one of Nakanouchi, King or Kitamura disclose or suggest the claim 1 recited obtaining data about particulates at locations along a pattern and determining a relative contrast of two or more of the particulates. As combined, Pavate, Nakanouchi, King and Kitamura fail to disclose or suggest the recited determining a relative contrast of two or more particles by scanning along a pattern. Accordingly, independent claim 1 is not rendered obvious and is allowable over the cited combinations of references.

Dependent claims 6 and 7 are amended to properly depend from independent claim 1. Dependent claims 2-8 are allowable over Pavate as combined with one or more of King, Kitamura and Nakaouchi for at least the reason that they depend from allowable base claim 1.

As amended, independent claim 9 recites retaining at least some components of a mixture on a substrate and scanning across at least a portion of the substrate with a

microscope to obtain images and generate information, at least some of the generated information relating to a relative contrast of the components. Independent claim 14 as amended recites utilizing a microscope to obtain data about retained undissolved material at locations along a grid pattern, at least some of the obtained data relating to a relative contrast of the retained undissolved material. Independent claim 40 recites utilizing a microscope to obtain data about impurities at locations along a grid pattern, the data including a relative darkness of the impurities relative to a background. Independent claims 9, 14 and 40 are allowable over the various cited combinations of Pavate, Nakanouchi, Kitamura and King for at least reasons similar to those discussed above with respect to independent claim 1.

Dependent claims 10-13, 15-34 and 41-44 are allowable over the cited combinations of Pavate, Nakanouchi, Kitamura and King for at least the reason that they depend from corresponding allowable base claims 9, 14 and 40.

Independent claim 35 recites scanning across a portion of a filter surface with a light microscope to obtain data about scattering of light by undissolved components on the filter surface. Claim 35 further recites the undissolved components comprising a first type of component being darker than a background and a second type of component being lighter than the background. Not one of Pavate, Nakanouchi, Kitamura and King disclose or suggest utilizing a light microscope to scan a portion of a filter surface to obtain data about scattering of light by a first type of component which is darker than a background a second type of component which is lighter than a background. Accordingly, independent claim 35 is not rendered obvious by the cited combinations of Pavate, Nakanouchi, King and Kitamura and is allowable over these references.

Dependent claims 36-39 are allowable over the cited combinations of Pavate, Nakanouchi, Kitamura and King for at least the reason that th y d pend from allowable

base claim 35.

As amended, independent claim 45 recites utilizing a reagent comprising a mixture of hydrochloric acid and nitric acid to selectively dissolve portions of a composition, the dissolved portions forming a solution with the reagent. Claim 45 additionally recites filtering the solution through a substrate, at least a portion of impurities being retained on the substrate. The amendment of independent claim 45 incorporates the subject matter of original claim 46 and therefore does not add "new matter" to the application. As noted by the Examiner at page 4 of the present action, Pavate discloses dissolving in an aqueous solution having 30% HCl, collecting solids out of the HCl solution onto a filter, and subsequently dissolving off copper utilizing a 10% HNO_3 solution. Pavate does not disclose or suggest the claim 45 recited dissolving utilizing a reagent comprising a mixture of hydrochloric acid and nitric acid and filtering the solution through a substrate, at least a portion of the impurities being retained on the substrate.

Not one of Nakanouchi, Kitamura or King discloses or suggests the claim 45 recited utilizing a reagent comprising a mixture of hydrochloric acid and nitric acid to selectively dissolve portions of a composition, the dissolved portions forming a solution with the reagent, and retaining at least a portion of impurities in the solution on a substrate during filtering. As combined, Pavate, Nakanouchi, Kitamura and King fail to disclose or suggest the claim 45 recited utilizing a reagent comprising a mixture of hydrochloric acid and nitric acid to selectively dissolve portions of a composition, the dissolved portions forming a solution with the reagent and filtering the solution through a substrate, at least a portion of impurities being retained on the substrate. Accordingly, independent claim 45 is allowable over the various cited combinations of Pavate, Nakanouchi, Kitamura and King.

As discussed above, the subject matter of original claim 46 has been incorporated into independent claim 45. Dependent claim 46 has been appropriately cancelled.

Dependent claims 47-49 are allowable over the recited combinations of Pavate, Nakanouchi, Kitamura and King for at least the reason that they depend from allowable base claim 45.

Independent claim 50 recites subdividing a flow pattern into a grid pattern, the grid pattern defining points at which a light microscope will scan a surface of the flow pattern. Claim 50 further recites the grid pattern defining a sufficient number of points for the microscope to scan at least 5% of the flow pattern surface. As discussed above, Pavate discloses collecting solids onto a filter and determining an inclusion size distribution using manual light microscopy techniques such as ASTM F24 and F25. Pavate does not disclose or suggest the claim 50 recited subdividing a flow pattern into a grid, the grid pattern defining points at which a light microscope will scan a surface of the flow pattern, the pattern defining a sufficient number of points for the microscope to scan at least 5% of the flow pattern surface. Not one of Nakanouchi, Kitamura and King disclose or suggest the claim 50 recited subdividing a flow pattern into a grid pattern, the grid pattern defining points at which a light microscope will scan a surface of the flow patter, the grid pattern defining a sufficient number of points for the microscope to scan at least 5% of the flow pattern surface. Pavate, as combined with one or more of Nakanouchi, Kitamura and King fails to disclose or suggest the claim 50 recited grid pattern defining points at which a light microscopr will scan a surface of a flow pattern, the grid defining a sufficient number of points to scan at least 5% of the flow pattern surface. Accordingly, claim 50 is allowable over the cited combinations of Pavate, Nakanouchi, Kitamura and King.

Dependent claims 51-58 are allowable over the cited combinations of Pavate, Nakanouchi, Kitamura and King for at least the reason that they depend from allowable base claim 50.

For th reasons discussed above, pending claims 1-45 and 47-58 are allowable.

Accordingly, applicant respectfully requests formal allowance of such pending claims in the Examiner's next action.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING RESPONSE TO MARCH 19, 2002 OFFICE ACTION

In the Claims

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

1. (Amended) A method of generating information about particulates present in a fluid, comprising:

filtering the fluid through a substrate, the particulates being retained on the substrate during the filtering;

after the filtering, scanning across at least a portion of the substrate with a microscope, the scanning comprising automated displacement of the substrate relative to an observing portion of the microscope along a pattern, the microscope obtaining data about said particulates at locations along the pattern; ~~and~~

digital image processing of the data obtained by the microscope to generate information about said particulates; and

determining a relative contrast of two or more of the particulates.

5. (Amended) The method of claim 1 wherein the generated information is information about a type of the particulates, wherein a particulate type relates to a relative content of at least one of carbon and oxygen within the particulate relative to another type of particulate.

6. (Amended) The method of claim 1 further comprising: ~~determining a relative contrast of two or more of the particulates; and~~ sorting the particulates amongst two or more types based upon the relative contrast.

7. (Amended) The method of claim ~~6~~ 1 wherein the determining a relative contrast of the particles comprises one or more of determining: (1) contrast of the particles relative to a background defined by the substrate, (2) color of the particles, (3) fluorescence of the particles, (4) response of the particles to electrons, (5) response of the particles to photons, (6) response of the particles to x-rays, and (7) response of the particles to particle beams.

9. (Amended) A method of generating information about materials present in a composition, comprising:

utilizing a reagent to dissolve at least a portion of the composition and thereby form a mixture;

filtering the mixture through a substrate, at least some components of the mixture being retained on the substrate during the filtering;

after the filtering, scanning across at least a portion of the substrate with a microscope to obtain one or more images of the substrate; and

digital image processing of the one or more images to generate information about said retained components, at least some of the generated information relating to a relative contrast of the components.

10. (Amended) The method of claim 9 wherein the generated information is information about one or more of the size, type, quantity and shape of the retained components, wherein different component types correspond to differences in at least on of conductivity, oxide content and carbon content between component.

14. (Amended) A method of generating information about materials present in a composition, comprising:

utilizing a reagent to disperse at least a portion of the composition and thereby form a dispersion of undissolved material in a solution;

filtering the dispersion through a substrate, at least some of the undissolved material being retained on the substrate during the filtering;

after the filtering, scanning across at least a portion of the substrate with a microscope, the scanning comprising automated displacement of the substrate relative to an observing portion of the microscope along a grid pattern, the microscope obtaining data about said retained undissolved material at locations along the grid pattern, at least some of the obtained data relating to a relative contrast of the retained undissolved material; and

processing the data obtained by the microscope to generate information about one or more of the size, shape, type and quantity of the undissolved material, undissolved material type being related to at least one of a conductivity, an oxide content and a carbon content of the undissolved material.

45. (Amended) A method of generating information about impurities present in a metal composition, comprising:

utilizing a reagent comprising a mixture of hydrochloric acid and nitric acid to selectively dissolve portions of the composition relative to at least some impurities present in the metal composition, the dissolved portions forming a solution with the reagent;

filtering the solution through a substrate, at least a portion of the impurities being retained on the substrate during the filtering;

after the filtering, mounting the substrate to a holder and scanning across at least a portion of the substrate with a microscope, the scanning comprising one or both of an actuated holder and an actuated microscope lens mounted to automate displacement of the substrate relative to the microscope lens along a grid pattern, the microscope obtaining data about the impurities at locations along the grid pattern; and

digitally analyzing the data obtained by the microscope to generate information about the size and quantity of the impurities.

46. (Cancelled).

48. (Amended) The method of claim 45 wherein the impurities comprise a first type of impurity and a second type of impurity which is different than the first type of impurity with respect to at least one of conductivity, carbon content and oxygen content, and wherein the data obtained by the microscope is utilized to distinguish the first and second types of impurities from one another during the analyzing.

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